

In the Claims

Claim 1 (currently amended): A final foamed product primarily of a PET matrix composition of recycled materials, said PET matrix composition consisting essentially of a micro cellular closed cell composite with discontinuous voids, said PET matrix composition comprising:

polyethylene terephthalate (PET); and
elastomeric material.

Claim 2 (currently amended): A final foamed product in accordance with claim 1 wherein said PET comprises recycled plastic bottles comprising PET.

Claim 3 (currently amended): A final foamed product accordance with claim 1 wherein said elastomeric material comprises recycled tires.

Claim 4 (currently amended): A final foamed product in accordance with claim 3 wherein said elastomeric material further comprises ethylene-propylene-diene monomer (EPDM) selected from the group consisting of: wiper blades and door gaskets.

Claim 5 (currently amended): A final foamed product in accordance with claim 1 wherein said elastomeric material comprises at least one elastomeric selected from the group consisting of: styrene-butadiene, polybutadiene, polyisoprene, and natural rubber.

Claim 6 (currently amended): A ~~composition~~final foamed product in accordance with claim 1 further comprising polyolefins selected from the group consisting of polyethylene and polypropylene.

Claim 7 (currently amended): A ~~composition~~final foamed product in accordance with claim 6 wherein said polyolefins comprise recycled products selected from the group consisting of: bottle-cups, bottle caps, labels, milk jugs, garbage bags, scrap sheeting, plastic bottles, and plastic toys.

Claim 8 (currently amended): A ~~composition~~final foamed product in accordance with claim 1 including at least one additive selected from the group consisting of: a foaming agent, compatibilizer agent, chain extending agent, hydrolytic resistance agent, and filler.

Claim 9 (currently amended): A final foamed product in accordance with claim 1 wherein the ~~final foamed product is~~ selected from the group consisting of: a docking post, telephone pole, dock support, deck, boat slip, pier, stake, shovel, rake, ax handle, hammer, handles, shingle, baseball bat, and cricket bat.

Claim 10 (currently amended): A final foamed product selected from the group consisting of a micro cellular closed cell composite with discontinuous voids, an open cell composite with semi-continuous voids, and combinations thereof, ~~said~~ final foamed product having a composition, comprising by weight:

from about 5% to about 95% polyethylene terephthalate (PET) with an inherent viscosity (I.V.) from about 0.4 to about 0.9; and

from about 5% to about 50% elastomeric-containing material selected from the group consisting of styrene-butadiene, polybutadiene, polyisoprene, and natural rubber.

Claim 11 (currently amended): A ~~foamed~~final foamed product having a composition in accordance with claim 10 comprising by weight:

from about 20% to about 80% PET with an inherent viscosity from about 0.5 to about 0.8; and

from about 10% to about 45% elastomeric-containing material with a density from about 0.9 to about 0.96 g/cc.

Claim 12 (currently amended): A ~~foamed~~final foamed product having a composition in accordance with claim 10 comprising:

from about 30% to about 60% PET with an inherent viscosity from about 0.6 to about 0.7; and

from about 20% to about 40% elastomeric-containing material.

Claim 13 (currently amended): A ~~composition~~final foamed product in accordance with claim 10 including at least one foaming agent selected from the group consisting of:

carbon dioxide, nitrogen, argon, cyclopentane, and a fluorocarbon partially substituted with chlorine, bromine, or iodine.

Claim 14 (currently amended): A ~~composition~~final foamed product in accordance with claim 10 comprising by weight:

from about 0% to about 25% polyolefin selected from the group consisting of polyethylene and polypropylene;

a compatibilizing agent comprising at least one binder selected from the group consisting of about 0% to about 6% Hytel-type binder comprising thermoplastic polyester elastomer of polybutylene terephthalate (PBT) and polytetrahydrofuran glycol, from about 0% to about 3% maleated polyolefin binder selected from the group consisting of polyethylene and polypropylene, and from about 0% to about 1% polyester elastomer binder comprising polybutadienediol (PDS);

from about 0.05% to about 2% of a branching agent providing a chain extending agent selected from the group consisting of pyromellitic dianhydride, trimellitic anhydride, benzophenonetetracarboxylic acid dianhydride, sulfonyldiphthalic acid dianhydride, 2, 2-bis (2-oxazoline), and pentaerythritol;

from about 0% to about 3% hydrolytic resistance agent selected from the group consisting of 2, 2'-bis (2-oxazoline), poly (1, 3, 5-triisopropylphenylene-2, 4-carbonimidate, N, N'-bis (2, 6-disopropylphenyl) carbodiimide, and 2, 6, 2', 6'-tetraisopropyldiphenyl carbodiimide; and

from about 0% to about 30% filler comprising additives selected from the group consisting of talc, silica, colorant, glass fibers, carbon black, and calcium carbonate.

Claim 15 (currently amended): A ~~composition~~final foamed product in accordance with claim 14 comprising by weight:

from about 0% to about 15% polyolefin;

a compatibilizing agent comprising at least one binder selected from the group consisting of about 1% to about 5% Hytel-type binder, from about 1% to about 2% maleated polyolefin binder, and from about 0.1% to about 0.8% polyester elastomer binder;

from about 0.2% to about 1% branching agent;

from about 0.2% to about 2% hydrolytic resistance agent; and

from about 0% to about 25% filler.

Claim 16 (currently amended): A composition-final foamed product in accordance with claim 14 comprising by weight:

from about 0% to about 5% polyolefin;

a compatibilizing agent comprising at least one binder selected from the group consisting of about 2% to about 4% Hytel-type binder, from about 0.5% to about 1.5% maleated polyolefin binder, and from about 0.3% to about 0.6% polyester elastomer binder;

from about 0.3% to about 0.6% branching agent;

from about 0.5% to about 1% hydrolytic resistance agent; and

from about 0% to about 20% filler.

Claim 17 (currently amended): A composition-final foamed product in accordance with claim 14 wherein said polyolefins comprise recycled products selected from the group consisting of: bottle-base cups, bottle caps, labels, mil jugs, garbage bags, scrap sheeting, plastic bottles, and plastic toys.

Claim 18 (currently amended): A foamed-final foamed product having a composition in accordance with claim 10 wherein:

said PET comprises recycled PET bottles; and

said elastomeric-containing material comprises granulated or pulverized recycled tires.

Claim 19 (currently amended): A foamed-final foamed product having a composition in accordance with claim 18 further comprising ethylene-propylene-diene monomer (EPDM) selected from the group consisting of vehicle wiper blades, door gaskets, vehicle seals, and refrigerator seals.

Claim 20 (currently amended): A foamed-final foamed product in accordance with claim 10 wherein said final foam product is having a selected from the group consisting of: a railroad tie, post, beam, strut, plank, pole, dock support, deck, boat slip, pier, stake, shovel, rake, ax handle, hammer, handle, shingle, baseball bat, and cricket bat.

Claim 21 (currently amended): A final foamed product in accordance with claim 1 comprising a foamed railroad tie.